AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (Currently Amended) A hard disk drive system comprising:

a hard disk drive comprising a channel;

a channel detector ~~adapted to~~ that receives a first signal representing a channel sequence from the channel, and ~~to~~ that produces a first detected sequence based on the first signal, wherein the first detected sequence comprises a plurality of symbols;

a decoder comprising:

an error-correction decoder ~~adapted to~~ that produces first data based on the first detected sequence when a number of symbols in error in the first detected sequence is less than, or equal to, a predetermined number, and ~~to~~ that asserts a failure indication when the number of symbols in error in the first detected sequence is greater than the predetermined number; and

a controller that ~~adapted~~, when the error-correction decoder asserts the failure indication for the first detected sequence, ~~to~~

causes the channel detector to receive a second signal representing the channel sequence from the channel, and to produce a second detected sequence based on the second signal, wherein the second detected sequence comprises a plurality of symbols, and

~~identify~~ identifies corresponding symbols of the first and second detected sequences that differ;

wherein the decoder produces second data based on the symbols identified by the controller and at least one of the first and second detected sequences.

2. (Currently Amended) The hard disk drive system of claim 1, wherein the error-correction decoder ~~is further adapted to~~ produces the second data based on the symbols identified by the controller and at least one of the first and second detected sequences.

3. (Currently Amended) The hard disk drive system of claim 1, wherein:

the controller ~~is further adapted to~~ generates a candidate sequence based on the first and second detected sequences; and

the error-correction decoder ~~is further adapted to~~ produces the second data based on the candidate sequence.

4. (Currently Amended) The hard disk drive system of claim 3, wherein the controller ~~is further adapted to~~ generates the candidate sequence by replacing k of the identified symbols of one of the first and second detected sequences with k respective corresponding symbols of the other of the first and second detected sequences, wherein k is greater than, or equal to, one.

5. (Original) The hard disk drive system of claim 1, wherein the error-correction decoder is a Reed-Solomon decoder.

6. (Original) The hard disk drive system of claim 1, wherein the channel is selected from the group comprising:

a magnetic recording channel; and

an optical recording channel.

7. (Currently Amended) The hard disk drive system of claim 1, further comprising:

an interface circuit ~~adapted to~~ that outputs the second data.

8. (Original) A hard disk drive system comprising:

channel means for storing data;

channel detector means for receiving a first signal representing a channel sequence from the channel, and for producing a first detected sequence based on the first signal, wherein the first detected sequence comprises a plurality of symbols;

decoder means for decoding the first detected sequence, the decoder means comprising

error-correction decoder means for producing first data based on the first detected sequence when a number of symbols in error in the first detected sequence is less than, or equal to, a predetermined number, and for asserting a failure indication when the number of symbols in error in the first detected sequence is greater than the predetermined number; and

controller means for, when the error-correction decoder asserts the failure indication for the first detected sequence,

causing the channel detector means to receive a second signal representing the channel sequence from the channel, and producing a second detected sequence based on the second signal, wherein the second detected sequence comprises a plurality of symbols, and

identifying corresponding symbols of the first and second detected sequences that differ;

wherein the decoder means produces second data based on the symbols identified by the controller means and at least one of the first and second detected sequences.

9. (Original) The hard disk drive system of claim 8, wherein the error-correction decoder means produces the second data based on the symbols identified by the controller means and at least one of the first and second detected sequences.

10. (Original) The hard disk drive system of claim 8, wherein:

the controller means generates a candidate sequence based on the first and second detected sequences; and

the error-correction decoder means produces the second data based on the candidate sequence.

11. (Original) The hard disk drive system of claim 10, wherein the controller means generates the candidate sequence by replacing k of the identified symbols of one of the first and second detected sequences with k respective corresponding

symbols of the other of the first and second detected sequences, wherein k is greater than, or equal to, one.

12. (Original) The hard disk drive system of claim 8, further comprising:

interface circuit means for outputting the second data.

13. (Currently Amended) An apparatus comprising:

a channel detector ~~adapted to~~ that receives a first signal representing a channel sequence from a channel, and ~~to~~ that produces a first detected sequence based on the first signal, wherein the first detected sequence comprises a plurality of symbols; and

a decoder comprising

an error-correction decoder ~~adapted to~~ that produces first data based on the first detected sequence when a number of symbols in error in the first detected sequence is less than, or equal to, a predetermined number, and ~~to~~ that asserts a failure indication when the number of symbols in error in the first detected sequence is greater than the predetermined number; and

a controller that ~~adapted~~, when the error-correction decoder asserts the failure indication for the first detected sequence, ~~to~~

causes the channel detector to receive a second signal representing the channel sequence from the channel, and to produce a second detected sequence based on the second signal, wherein the second detected sequence comprises a plurality of symbols, and

~~identify~~ identifies corresponding symbols of the first and second detected sequences that differ;

wherein the decoder produces second data based on the symbols identified by the controller and at least one of the first and second detected sequences.

14. (Currently Amended) The apparatus of claim 13, wherein the error-correction decoder ~~is further adapted to~~ produces the second data based on the symbols identified by the controller and at least one of the first and second detected sequences.

15. (Currently Amended) The apparatus of claim 13, wherein:

the controller ~~is further adapted to~~ generates a candidate sequence based on the first and second detected sequences; and

the error-correction decoder ~~is further adapted to~~ produces the second data based on the candidate sequence.

16. (Currently Amended) The apparatus of claim 15, wherein the controller ~~is further adapted to~~ generates the candidate sequence by replacing k of the identified symbols of one of the first and second detected sequences with k respective corresponding symbols of the other of the first and second detected sequences, wherein k is greater than, or equal to, one.

17. (Original) The apparatus of claim 13, wherein the error-correction decoder is a Reed-Solomon decoder.

18. (Original) The apparatus of claim 13, wherein the channel is selected from the group comprising:

a magnetic recording channel;

an optical recording channel;

a wired communications channel;

a wireless communications channel; and

an optical communications channel.

19. (Original) An integrated circuit comprising the apparatus of claim 13.

20. (Original) An apparatus comprising:

channel detector means for receiving a first signal representing a channel sequence from a channel, and for producing a first detected sequence based on the first signal, wherein the first detected sequence comprises a plurality of symbols; and

decoder means for decoding data, the decoder means comprising

error-correction decoder means for producing first data based on the first detected sequence when a number of symbols in error in the first detected sequence is less than, or equal to, a predetermined number, and for asserting a failure indication when the number of symbols in error in the first detected sequence is greater than the predetermined number; and

controller means for, when the error-correction decoder asserts the failure indication for the first detected sequence

causing the channel detector means to receive a second signal representing the channel sequence from the channel, and to produce a second detected sequence based on the second signal, wherein the second detected sequence comprises a plurality of symbols, and

identifying corresponding symbols of the first and second detected sequences that differ;

wherein the decoder means produces second data based on the symbols identified by the controller means and at least one of the first and second detected sequences.

21. (Original) The apparatus of claim 20, wherein the error-correction decoder means produces the second data based on the symbols identified by the controller means and at least one of the first and second detected sequences.

22. (Original) The apparatus of claim 20, wherein:

the controller means generates a candidate sequence based on the first and second detected sequences; and

the error-correction decoder means produces the second data based on the candidate sequence.

23. (Original) The apparatus of claim 22, wherein the controller means generates the candidate sequence by replacing k of the identified symbols of one of the first and second detected sequences with k respective corresponding symbols of the other of the first and second detected sequences, wherein k is greater than, or equal to, one.

24. (Original) An integrated circuit comprising the apparatus of claim 20.

25. (Original) A method comprising:

receiving a first signal representing a channel sequence from a channel;

producing a first detected sequence based on the first signal, wherein the first detected sequence comprises a plurality of symbols;

producing first data based on the first detected sequence when a number of symbols in error in the first detected sequence is less than, or equal to, a predetermined number;

asserting a failure indication when the number of symbols in error in the first detected sequence is greater than the predetermined number;

when the failure indication is asserted for the first detected sequence,

receiving a second signal representing the channel sequence from the channel,

producing a second detected sequence based on the second signal, wherein the second detected sequence comprises a plurality of symbols, and

identifying corresponding symbols of the first and second detected sequences that differ; and

producing second data based on the identified symbols and at least one of the first and second detected sequences.

26. (Original) The method of claim 25, wherein producing the second data comprises:

generating a candidate sequence based on the first and second detected sequences; and

producing the second data based on the candidate sequence.

27. (Original) The method of claim 26, wherein generating the candidate sequence comprises:

replacing k of the identified symbols of one of the first and second detected sequences with k respective corresponding symbols of the other of the first and second detected sequences, wherein k is greater than, or equal to, one.

28. (Original) The method of claim 25,wherein the channel sequence is encoded using a Reed-Solomon code.

29. (Original) The method of claim 25,wherein the channel is selected from the group comprising:

a magnetic recording channel;

an optical recording channel;

a wired communications channel;

a wireless communications channel; and

an optical communications channel.

30. (Original) A computer program embodying instructions executable by a computer, comprising:

producing a first detected sequence based on a first signal representing a channel sequence from a channel, wherein the first detected sequence comprises a plurality of symbols;

producing first data based on the first detected sequence when a number of symbols in error in the first detected sequence is less than, or equal to, a predetermined number;

asserting a failure indication when the number of symbols in error in the first detected sequence is greater than the predetermined number;

when the failure indication is asserted for the first detected sequence,

producing a second detected sequence based on a second signal representing the channel sequence from the channel, wherein the second detected sequence comprises a plurality of symbols, and

identifying corresponding symbols of the first and second detected sequences that differ; and

producing second data based on the identified symbols and at least one of the first and second detected sequences.

31. (Original) The computer program of claim 30, wherein producing the second data comprises:

generating a candidate sequence based on the first and second detected sequences; and

producing the second data based on the candidate sequence.

32. (Original) The computer program of claim 31, wherein generating the candidate sequence comprises:

replacing k of the identified symbols of one of the first and second detected sequences with k respective corresponding symbols of the other of the first and second detected sequences, wherein k is greater than, or equal to, one.

33. (Original) The computer program of claim 30, wherein the channel sequence is encoded using a Reed-Solomon code.